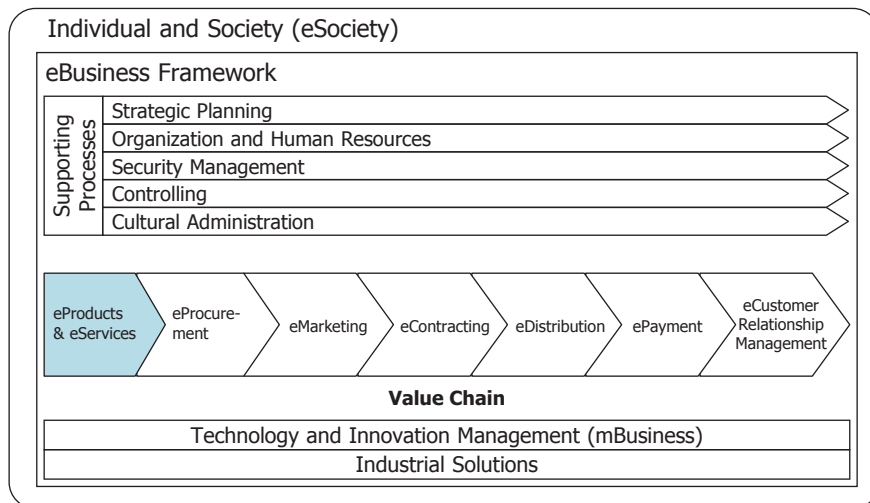


2 eProducts and eServices



The organization of digital products and services requires the aid of a business model to evaluate both forms of cooperation (business webs) and use potentials. Section 2.1 explains the components of a business model which include the organization of the business process, the establishment of a price model, and security policy. Section 2.2 follows with an explanation of the anatomy of the electronic marketplace. Section 2.3 describes and exemplifies different types of business webs, such as agora (open marketplace), aggregator, integrator, alliance (self-organized community), and distributor. These forms of cooperation are compared and evaluated in Sect. 2.4, and an illustrated example is given. Section 2.5 is devoted to the process of price formation, which involves price differentiation, linear, nonlinear and dynamic price development, and price bundling. Section 2.6 summarizes profit models in electronic markets. Literary references can be found in Sect. 2.7.

2.1 Components of a Business Model

*Web
utilization—a
strategic
challenge*

The goal for companies that use information and communication technologies is to procure and analyze information on market participants as well as on existing and potential customers and thus develop and sell products and services that are promising. While doing so, Web-based information systems naturally become a strategic tool. On the one hand, they allow the development of the market and the behavior of market participants to be studied and interpreted (see eCustomer Relationship Management in Chap. 8). On the other hand, information systems support the design and production of goods and services.

*Contrasting
marketplace
and market
space*

As we evolve towards a networked information society, a change in the market system for companies can be observed. On the one hand, the physical marketplace, concerned with existing physical raw materials, products and resources, is still present. Here, physical value-creating processes are required in order to procure, develop, and distribute material goods. However, due to the development of the Internet, the physical marketplace is now being supplemented. As a result, one can now speak of a digital market space where digital products and services can be developed and sold inside networks.

*Product mix of
material and
digital goods*

Companies must decide upon a business model to see if and how both the physical and the electronic market space can be worked. The company strategy must include both market options in most cases. In other words, the fundamental questions to consider are: how should a promising mix of materials and/or intangible product parts and services be determined, and how should the appropriate business transactions be carried out?

*Components of
a business
model for
eBusiness*

When creating a business model for electronic business, it is necessary to clarify the following issues:

Defining products and services. It must be decided whether the existing range of products should be supplemented, replaced, or extended by digital information objects and services. The degree of digitization of individual products and services depends upon the market and upon acceptance by existing or desired customers.

Defining target customers and sales markets. Analytical methods are used to evaluate which customers and customer segments possess high customer value (through the use of a customer data warehouse, see Sect. 8.3). Customer groups that can potentially increase customer capital and reduce startup risk or exposure to loss are also highlighted.

Evaluation and selection of suitable business webs. A business web is a network used for the creation and marketing of digital products and services (see Sects. 2.3 and 2.4). The aims and principal characteristics of business webs range from open marketplaces with negotiable goods and services (agora type) to tightly organized hierarchical networks (aggregator, integrator, or distributor types) to self-organized and loosely coupled communities (alliance type).

Organization of business processes. The organization of the business processes involved determines which activities are to be carried out automatically and which are to be realized manually. The logistics of distribution (Sect. 6.2) and the establishment of the supply chain (supply chain management, Sect. 6.3) are also important, but in this case online, offline, or hybrid distribution and reference structures can be chosen.

Price model and methods of payment. The original production of a digital good is cost intensive, whereas the marginal costs of reproduction (i.e., the production of copies) are negligible in all respects. Moreover, the profit generated grows with the number of consumers that use the products and services (network effects, see Sect. 2.5). Apart from price formation, price differentiation, and price bundling, it is necessary to examine and—as required—offer suitable electronic payment options (see Chap. 7 on electronic payment and Sect. 9.3 on mobile payment).

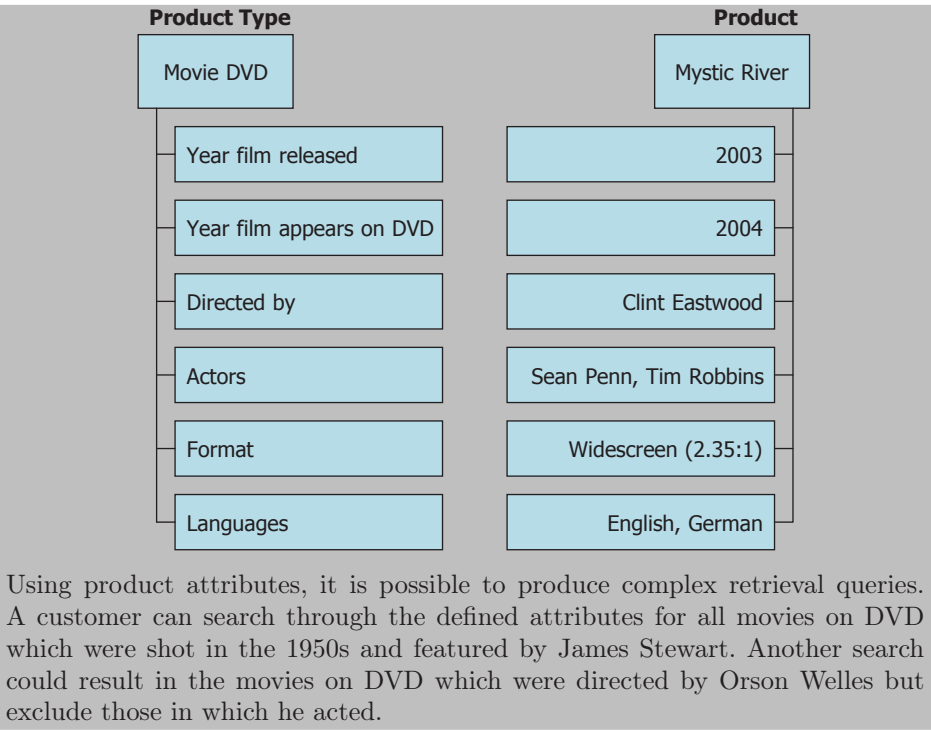
Creation of a security policy. A risk assessment matrix with opportunities and risks of electronic business can help to weigh up existing resources and means, and when required can help with transacting additional investments. A security policy must be adopted in order to ensure the integrity, availability, and privacy of electronic business (see cryptography procedures and digital signatures in Chap. 5 on electronic contracting).

Due to the expansion of the physical marketplace into an electronic market space, the globalization of many business activities, and the constant development into an information society, each company must reconsider its own market focus. At the same time, concentration on core competencies and network formation with promising partners (as in the construction of suitable business webs) helps in this regard.

*Developing an
eBusiness
strategy*

Case Study eDVDSHOP: Web Presence

After eTorrent has set up the eDVDSHOP on one of its servers, Anderson can begin to configure the shop according to his wishes. eSarine is totally language independent. Consequently, a shop can be run in as many languages as desired. Anderson decides to maintain the shop in English and German. The entire range of goods must therefore be recorded in two languages and filed with pictures and descriptions in the shop. Anderson can use the English labels and descriptions of the products from the existing pages and simply translate them into German. eSarine, however, like many other webshops, offers the possibility of defining product attributes for products. One product attribute for a DVD could be the director of the film. In eSarine, all product attributes are grouped into so-called product types. Anderson sets up the DVD product type and defines several product attributes.



2.2 Anatomy of an Electronic Marketplace

Intermediaries
and
infomediaries

Market participants change the intermediation in electronic markets by offering services in lieu of particular value-creating stages. With this sort of intermediation, the value chains are broken up by third-party providers (intermediaries and infomediaries). This enables companies to concentrate on core competencies and to delegate less important activities to collaborating partners (see different b-webs in Sect.2.3). In the process, specialized companies take over a certain domain of the value-creating chain by acting as intermediaries. This is meant to reduce costs and to achieve specialization.

Horizontal and
vertical
integration

Horizontal and vertical integration variants exist in intermediation: certain members of several value-creating chains support the provider horizontally when the procurement of goods is involved (see Sect. 2.2.1 on horizontal integration). In a comprehensive producer portal, however, market participants organize themselves within an industry and integrate their value chains vertically (see Sect. 2.2.2 on vertical integration).

What is disin-
termediation?

Along with intermediation, disintermediation is observed at the same time in electronic markets. With disintermediation, intermediate stages of the value-creating chains are dissolved, and in extreme cases direct access of customers to the range of services of the respective provider is facilitated. This threatens the existence and intermediary function of middlemen (intermediaries).

For companies that would like to gain a foothold in the electronic market, the advantages of disintermediation are as follows:

*Advantages of
disintermedia-
tion*

- By avoiding middlemen, cost advantages and margin gains can be realized.
- With the aid of Internet-based means of communication, an electronic customer relationship and customer connection is established (see eCustomer relationship management in Chap. 8).
- Direct access to the customer allows for the analysis of customer behavior and the appraisal of customer preferences. Qualified customer feedback aids in the appropriate expansion of the product and service range.
- Depending on the customers' willingness to pay, certain products and services can be offered to specific customers (see mass customization and on-demand production in Sect. 6.3).

Some forms of disintermediation can also have an unfavorable effect. Issues with trade partners often develop when existing middlemen are avoided or their freedom of action is reduced. Moreover, for direct customer contact, appropriate relations management must be developed and customer processes efficiently supported.

2.2.1 Horizontal Integration

In horizontal marketplaces, market participants characteristically take over activities which do not directly belong to the core business of the company. Thus the individual company is relieved of some of the burden; at the same time, optimization and enhanced quality are strived for through the bundling over industries. Figure 2.1 schematically shows horizontal integration for the example of a procurement process. Some companies have recognized that they can optimize their relationships with providers of MRO services (maintenance, repair, and operations), and thus the procurement processes associated with them. Using so-called desktop purchasing systems (see Sect. 3.5), the collaborators receive current information from the product and supplier catalogs of companies, generate their orders, and initiate subsequent delivery and payment processes. According to data from industrial enterprises, an average of approximately 80% of all purchase transactions have their origins in the procurement of indirect MRO services. If one takes into account the tangible assets in these indirect services, then they result in one-third of the external costs of a company on average. Aside from the costs of direct services and personnel, indirect MRO services thus represent the largest cost block for a company.

*Outsourcing
options for
procurement*

*Optimization
with MRO
services*

The Ariba ORMS (operating resource management system) software system from Ariba Technologies, Inc. is probably the most well-known desktop purchasing system (see Sect. 3.5). It includes a high-performance search engine and a graphic workflow component for the procurement process. Ariba ORMS is an

*Application of
desktop
purchasing
systems*

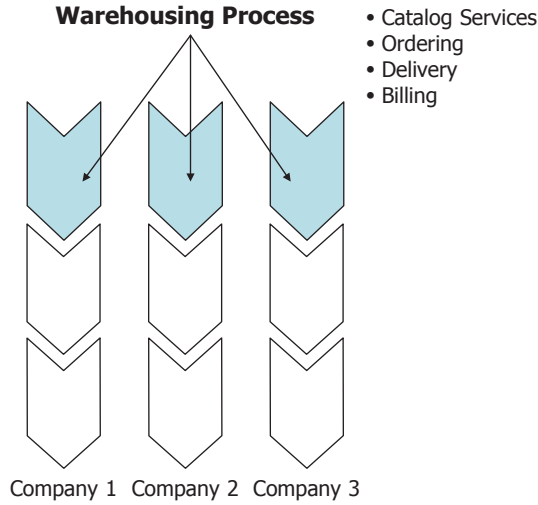


Fig. 2.1: Horizontal integration of the procurement process for MRO goods

application that is installed on the buyer's intranet which reflects the company-specified procurement rules and realizes the posting of ordered goods for the company. In the process, purchasing companies generate a contract with Ariba Technologies, Inc. for the desired number of MRO transactions. Subscription fees for software adjustments and hotline services are charged. Maintenance of the supplier catalogs is carried out by either the suppliers themselves or a third party (see Chap. 3 on eProcurement). Both products (such as preconfigured computers, software, magazines, books, office supplies, office furniture, or industrial products for maintenance) and services (such as advertisements, bank services, cafeteria, hotlines, copying services, courier services, travel, and training) can be administered in the same way.

Desktop purchasing systems automate the procurement process. Due to refined software, this is less error-prone and ties up fewer personnel resources in the other company. In addition, orders within the company can be bundled in order to negotiate favorable prices with the suppliers. The procurement process itself, the stock, and the delivery schedule can be viewed at any time by the individual employees.

2.2.2 Vertical Integration

*Development of
a one-stop shop*

Selected participants in vertical marketplaces become one-stop shops for companies of a particular industry. They offer additional information services aside from transactions. Extensive information offers, relevant industry identification numbers, and annotated link collections demonstrate the competency of the operator in the market and force individual companies into integration. If the business model of the vertical integrator in a particular industry works well, then the

recipe for success is transferred to other industries. Thus, vertical integrators act as market makers—they establish new marketplaces as they bring customers and suppliers of fragmented marketplaces together (see Sect. 3.3.4).

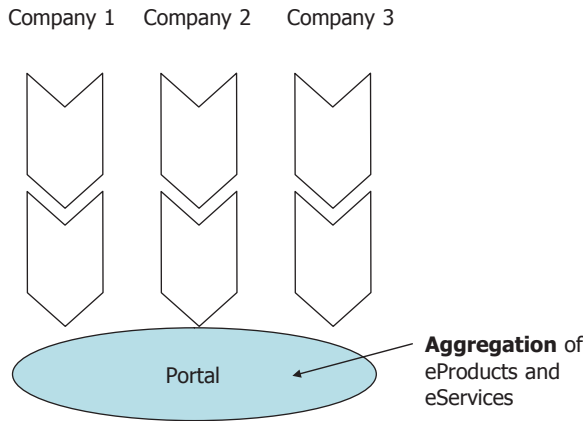


Fig. 2.2: The one-stop shop as vertical integrator

If a multitude of geographically distributed customers and suppliers exist for whom communication with their respective market partners involves high expenditure, then a one-stop shop may proffer its services. These are market participants who vertically integrate the value chains of various providers. The source of income for a one-stop shop usually consists of transaction commissions, fees for listings, banner advertisements, as well as sales of POS (point of sale) data (see Fig. 2.2). The one-stop shop operates its Internet platform as a portal; it takes over the online marketing, editing and maintenance of supplier catalogs, and sometimes also customer service and the design of new product components or services.

From the Internet platform to portals

Apart from the one-stop shop, there are other forms of vertical integration, such as Internet auctions and Internet spot markets. An Internet auction house supports the seller with regard to an optimal price strategy, takes over marketing, and carries out credit assessment and payment handling. In Internet auctions, market participants need to be fully aware that they are dealing with legally binding transactions with quality standards that are customary to the industry (see Sect. 2.5.4).

The auction as a form of vertical integration

Internet spot markets are real-time stock exchanges where smaller groups of providers and consumers carry out last-minute transactions. By means of vertical integration, companies with unused capacity can realize additional sales with acceptable prices. Pricing takes place online. For the operator of an Internet spot market, success depends on whether it can procure relevant market participants and develop a trustworthy image.

Internet-based real-time stock exchanges

2.3 Classification of Business Webs According to Tapscott

2.3.1 Agora B-Web

The term “agora” originates from antiquity, and was used to designate the people’s assemblies held at that time. Later, the term was also used for a public meeting place where business was conducted, including trade.

Agora b-web

The agora business web or b-web is an electronic marketplace where buyers and sellers meet in order to openly negotiate over the goods offered and their prices. What is important in the agora is the process of dynamic price discovery. In an agora there are no fixed prices; the prices are negotiated. An agora promotes the exchange of digital and material goods and services, as providers and buyers haggle among themselves over the price. In Fig. 2.3 the basic structure of

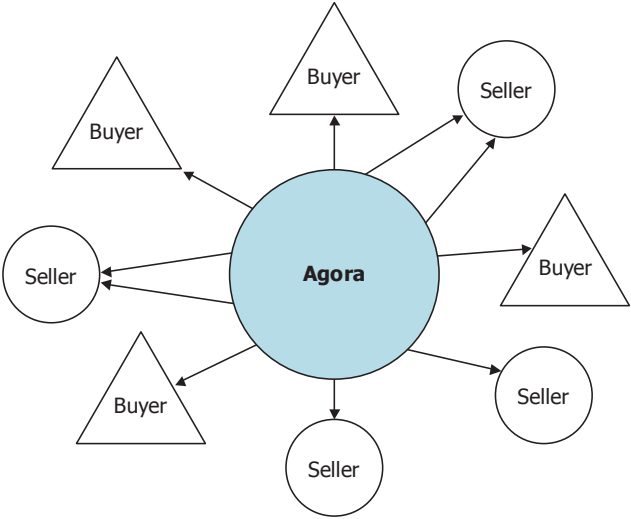


Fig. 2.3: The agora: an open marketplace with dynamic price discovery

the agora b-web is shown: providers or sellers (symbolized by circles) offer their goods and services in the virtual marketplace. Consumers or buyers (symbolized as triangles) inform themselves and discuss elements of the products, including rights to use and individual prices.

Different service providers can offer and sell products and services in an agora. Though the offer is manifold and not viewed beforehand, the value integration remains decided. Indeed, well-functioning marketplaces acting as agoras show advantages for both providers and consumers. The buyers profit since there are a high number of providers offering various products and services. Conversely, the presence of many consumers with different ideas about the value of a certain product will push up the value of the product offered, to the benefit of the provider.

*Advantages for
customers and
providers*

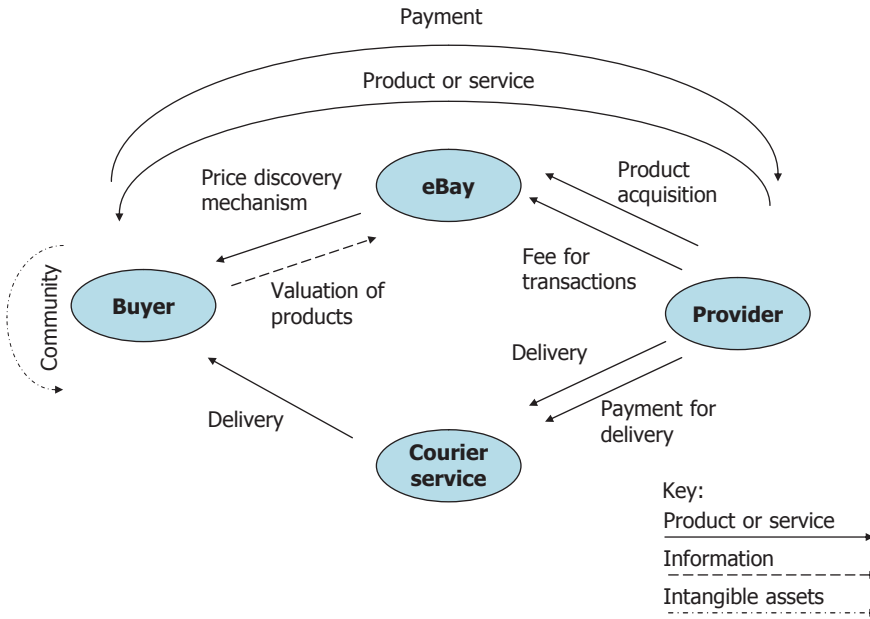


Fig. 2.4: Value contributions for eBay (an agora)

An agora normally offers diverse information on all aspects of the business. At the same time, it keeps marketing and distribution costs low. Bargain hunters often lend it a special appeal and offer sought-after entertainment to market participants. The Internet can transform the agora into an interesting meeting place with efficient market channels. Goods or services that were previously sold in flea markets or through the classified ads of daily newspapers suddenly show up in global auctions and stock exchanges.

Demand for auctions

The well-known agora, eBay.com, is presented in Fig. 2.4, along with its value contributions. eBay started at the end of the 1990s, acting as a low-key collectors exchange and junk market, but it has since developed into an important electronic marketplace. eBay is a neutral third party that provides customers (buyers) and content providers (sellers) with a platform for negotiations and transactions. The central value of eBay lies in the offer of a trust-building platform for the exchange of information, the opportunity for dynamic price discovery, and the impetus for service completion.

Business idea of eBay

Platforms such as eBay put low transaction costs to use: the customers—providers and consumers—perform most of the work and cover most of the costs and risks. Such platforms for trading material and digital goods have the following advantages:

Potential benefits of eBay

No storage costs. The providers store their own products.

Minimal marketing costs. The providers describe and illustrate their products on the platform themselves.

Reduced distribution costs. Buyers and providers regulate dispatch and payment among themselves.

Low product liability. Products are auctioned (process of price formation, see Sect. 2.5); the buyer carries the risk.

Low financial risk. The providers authorize the operator of the exchange platform to collect an auction fee.

In an agora, the customers or customer groups often develop into a community. The participants of auctions agree to an organized process involving negotiation, pricing, and distribution of goods.

2.3.2 Aggregator B-Web

A b-web of the aggregator type is a digital supermarket: it selects suitable products and services from different producers, decides on the appropriate market segments, sets prices, and supervises the fulfillment of the transaction.

Hierarchical control of suppliers

In Fig. 2.5 the constellation of an aggregator is depicted in an abstract manner. A single company in this b-web controls several producers in a hierarchical fashion. The aggregator buys products and services according to its own discretion, and to a great extent sets the purchase prices. It then determines the selling prices and discounts for the assortment of goods. It also controls the sale and distribution of the goods. Aggregators take on an intermediary function between

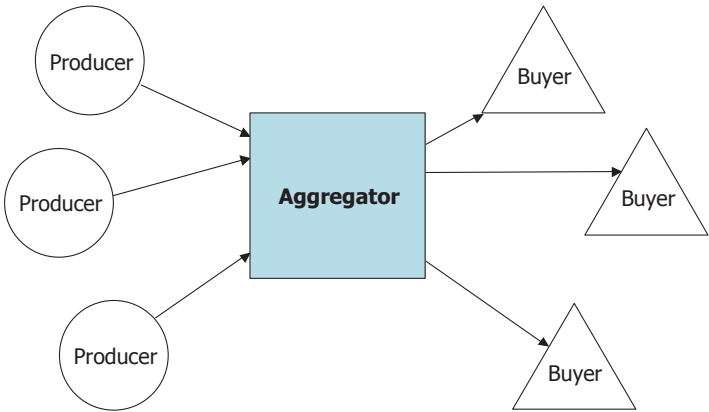


Fig. 2.5: An aggregator combines products and dictates prices

producers and customers. Normally they offer a large selection of products and services without or with only minimal value integration (see also the value chain of the integrator b-web in Sect. 2.3.3).

The Amazon aggregator

Probably the most well-known aggregator is the book/video/CD shop, Amazon.com. The products sold by this supermarket are to a large extent standardized. They are easily cataloged and described and visualized electronically in

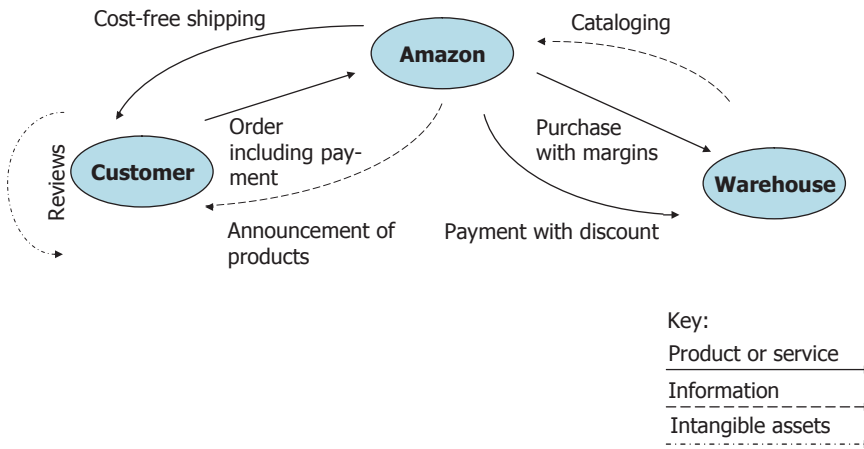


Fig. 2.6: Goods and information flow through the aggregator Amazon

varying detail. In addition, samples (textual, visual, and audio) are provided. By skillfully recording the behavior of visitors and sales, it is also possible to make recommendations.

In comparison to many consumer goods, books and CDs are relatively easy to transport. Since the handling volume at Amazon is large, the shipment costs can be waived from a fixed sales gross upon accounting.

In Fig. 2.6, the value contributions for Amazon are visualized. The customer can find books or CDs with a simple search procedure and study the different summaries. In addition, reviews from customers and experts can act as purchase recommendations. Shipment normally takes place free of charge with an order. Amazon can make use of its market power when dealing with publishing houses and negotiate special offers. The cataloging of the books and CDs takes place through the publishing houses themselves. Modes of payment to customers such as publishing houses are specified and accomplished by the aggregator.

Amazon's fulfillment model has changed and developed since the initial phase of the company. In the past, orders received by Amazon were passed on to partners, who then packed and delivered the books and CDs. Now, popular products are kept in a warehouse and delivered by Amazon itself. When orders are fulfilled from the warehouse it means higher profit margins and faster delivery to customers. Cross-selling measures can also be adapted more efficiently in this case.

Using their market volume and market power, aggregators can lower their transaction costs, particularly through the use of Internet technologies and appropriate digital agents. The digital supermarket can be operated to a great extent by intelligent software agents. Simple agents advise the buyers and look for and value the desired products in their own supermarket or directly among the providers. Intelligent agents help the customers to clarify their desires and to select an attractive combination from the variety of offers. In individual cases,

Customized offer

The path to cross-selling

Employing intelligent software agents

software agents can themselves negotiate the value mix, quality requirements, price, delivery conditions, and modes of payment.

*Advantages of
an aggregator
b-web*

To summarize, aggregators possess the following advantages:

Strong negotiation power. The aggregator selects the products and establishes the price.

Employment of digital advisors. Software agents help with search and comparison procedures and advise the customer.

Independent product valuation. Advantages and disadvantages of products are understood by the customers and published by the aggregator as a decision-making aid.

Sale stimulation. In the digital supermarket, products can be bundled and cross-selling measures realized.

Customer saves on shipping costs. The aggregator can create incentives by utilizing scale effects and low transaction costs.

There are aggregators in both the B2B and the B2C realms. Apart from consumer goods, digital products such as financial and insurance services are also sold with aggregators.

2.3.3 Integrator B-Web

*Integrator as a
value chain*

A business web of the integrator type is a value-creating chain that includes all of the components—from specification, production and delivery to support for products and services—desired by the customer. An integrator does not itself produce services or product components, but rather works as a context provider. As such, it integrates the value contributions of various content providers such as external developers, parts suppliers, dealers, solution integrators, operators, and other partners. In other words, the integrator controls the organization of the products and the services and directs the steps toward value integration.

*Function of the
integrator
b-web*

In Fig. 2.7 the basic principle of an integrator is illustrated: different producers with different capabilities and services are combined into value chains and directed by the integrator. The motivation to implement such a value chain is provided by customers who are striving for an individual and usually complex solution, possibly with a high investment volume. When an individual producer is not able to offer or does not want to offer the optimal solution, the integrator will assume this responsibility; often the integrator takes the role of a general contractor, with the corresponding responsibilities. This again forces the integrator to merge the content providers into an optimized supplier relationship and to competently control the planning, development, installation, and service processes (see supply chain management in Sect. 6.3). An integrator's goal is to make the value chain demand-oriented. In other words, an offer is only created upon demand. A customer need therefore triggers the construction of what may be an individually shaped supply chain.

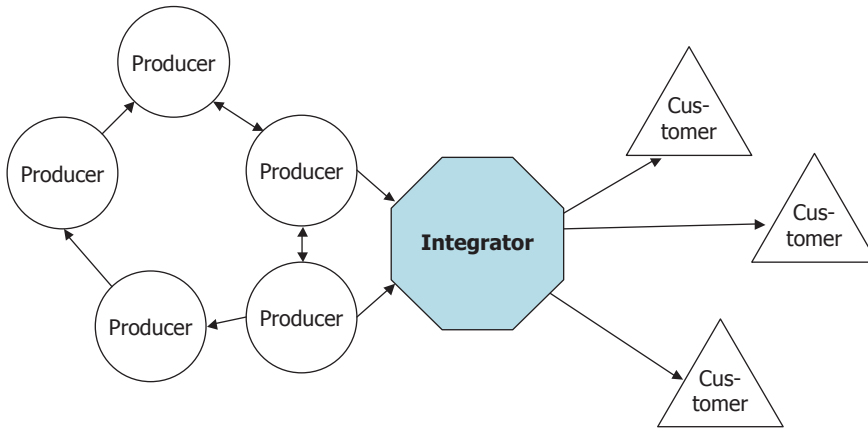


Fig. 2.7: An integrator b-web controlling the optimized value chain

A real-world example of a b-web of the integrator type is given in Fig. 2.8. Cisco is a well-known provider of telecommunication networks and components. In the value chain, Cisco connects and supervises semiconductor producers, dealers of component parts, logistics companies, as well as system integrators.

One normally thinks of a value chain as being associated with mass production or routine production with large-scale logistics and storekeeping. However, Cisco is a value chain of the shop production type; in this case, custom-made networks are developed for customer-specific problems.

Shop production differs substantially from mass production. First of all, the activities necessary in shop production are not routine procedures, since they are planned and carried out based on the customer's problem. Moreover, the workshop does not follow the "make and sell" logic; it begins production of the commodity only when it is already sold. Shop production therefore orients itself to the consumer and only produces "on demand" (see Sect. 6.3.3). The customer placing the order sets the value chain into motion. After all, the customer in a shop production process participates in the conception and occasionally also in the realization of a solution. Cisco represents a mixture of routine production and shop production. The networks supplied by Cisco, including hardware and software, are configured and produced when ordered. At the same time, individual components from mass production are also used in the value chain.

*Shop
production*

Content providers in a b-web of the integrator type are often spread out and specialized. The success of an integrator therefore depends on good planning and coordination of the different partners. Project management plays an important role in the process, including the use of knowledge resources.

The advantages of using an integrator b-web can be summarized as follows:

*Advantages of
an integrator
b-web*

Customer-oriented solution. The customer order comes first, with initial partial payments being made when the order is placed.

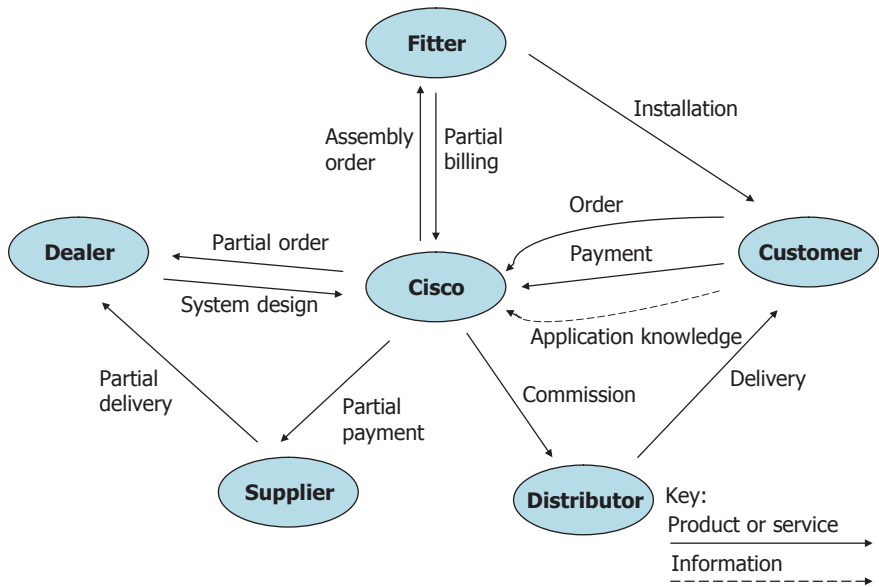


Fig. 2.8: Value integration in the Cisco b-web

General contractor. The integrator assumes full responsibility for the customer order.

Formation of a value chain. The selection of suppliers, the networking, and appropriate negotiations are all realized by the integrator.

Shop production instead of routine production. All components are custom-made.

Project and method knowledge. The integrator controls project management and knowledge use.

In the digital economy, the best value chains compete in terms of both cost and differentiation. They must look for customer-oriented solutions and offer individual and service-supported production in place of mass-produced goods.

2.3.4 Alliance B-Web

*Why promote
an alliance
b-web?*

Alliances are business webs that are loosely coupled and self-organized partner networks (also often called communities) which pursue a common goal. The individual partners bring their specific know-how to the table, and at the same time take part in developing the solution. They are—and remain—independent, and try to compensate for a lack of competency by producing suitable network partners.

Figure 2.9 illustrates an alliance business web. The members of this partner network have dual roles: they are each consumers that have a need and are looking for a solution (graphically expressed by triangles), and at the same time each participates in solution development as a producer (graphically suggested by circles). The word “prosumer” has been created to express this dual producer and consumer role. A b-web of the alliance type is a dynamic creation with equal partners which, upon encountering various challenges, reorganizes itself each time and develops further. In this way, no partner dominates and controls the partner network. Rather, the loosely coupled partner network is held together by a few behavioral rules.

An alliance as a prosumer

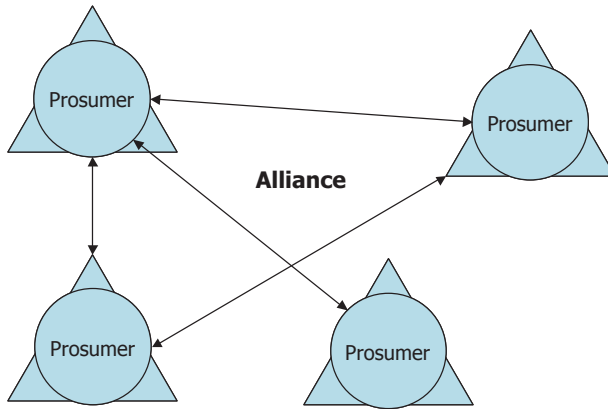


Fig. 2.9: The alliance b-web forms a value module

B-webs of the alliance type develop on a voluntary basis, motivated by a common need. At first there is a creative idea which needs to be adapted by the partners as a group. Mutual respect, intangible assets, and unconventional ideas are the drivers of such partner networks. Alliances distinguish themselves as being a high-value form of integration; they can be considered “value modules.”

Network of equal partners

In many cases, alliances are temporally limited. They come into being when small companies or individual persons congregate and develop a mutual solution. If the solution is found, it is circulated and passed on, normally free of charge.

Establishment of a value program

The development of the Linux operating system serves as an example of a b-web of the alliance type (Fig. 2.10). After the Finnish student Linus Torvalds developed a simple kernel for a Unix clone for PCs, he made the software available for free on the Internet (i.e., as open source) for further development. The users were merely obligated to pass the program and possible extensions on with the source code. In the years that followed, qualified programmers around the world developed innumerable improvements and extensions to this operating system.

The development of Linux

Today Linux is a stable and extensive software product which remains available to open source companies and private individuals. It is installed on millions of different servers around the world and fulfills its purpose. Web browsers, email services and other applications can all be operated on this system.

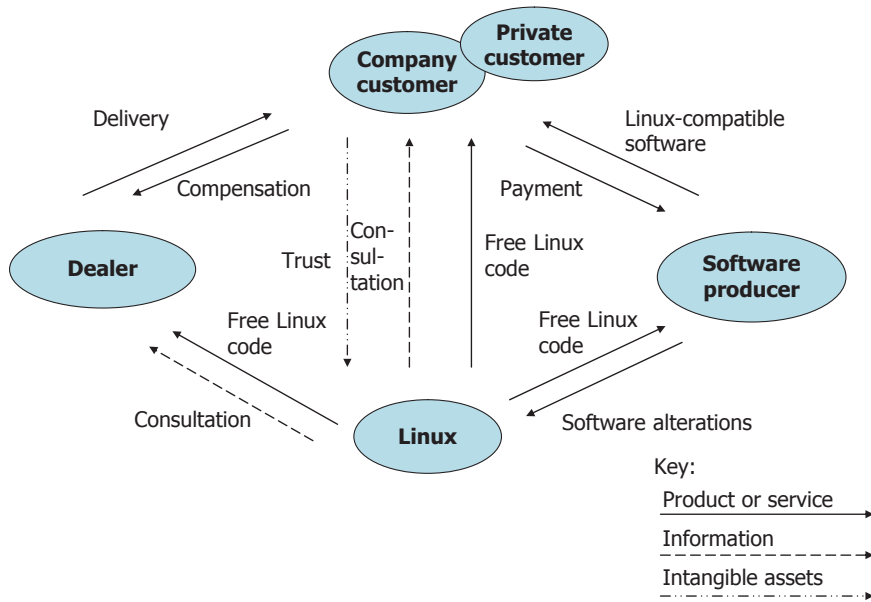


Fig. 2.10: The value module of the Linux alliance

*Success of open
source
developments*

In their spare time, scientists, self-employed individuals and employees have voluntarily and without monetary incentives downloaded the source code from Linux and then tested and extended it with ingenious functions. The users of Linux can download the source code over the Internet free of charge, or they can buy a version on CD for a minimal fee from companies such as SuSE or Red Hat, and acquire the right to unlimited use. Alliances are formed in a variety of ways. Apart from networks for the development of open source software packages, there are social communities, specific discussion and help forums, networks for freelance artists, expert communities, etc.

A b-web of the alliance type exhibits the following advantages:

*Advantages of
the alliance
b-web*

Network formation. Partners in an alliance form a network of equal rights.

Self-organization. A few behavioral rules promote collaboration.

Prosumer. The partners are simultaneously producers (supplying creative products and services) and consumers (demanding solutions).

Value module. Intangible assets are created together.

Idealized objective. Mutual respect, trust, and common value creation form the basis of the alliance.

An alliance is a virtual network that aims to develop creative solutions and does so without hierarchical guidance structures. The participants of an alliance form

a creative community aligned towards a goal. It therefore remains one of the most transitory and at the same time most innovative types of business web.

2.3.5 Distributor B-Web

A distributor b-web is a distribution network that transfers material products, intangible products and services from the producer to the user. Distributors fulfill a distribution function, acting (for example) as a transportation company, electricity provider, financial service, courier service and postal service, communications network operator, or logistics company.

Integrators and alliances contribute to the value chain by refining raw materials or ideas into products or services. An agora and aggregator selects goods, offers them, and negotiates the price. Distributors, however, in their original form, assist the four previously discussed b-webs by ensuring that the information, goods, and services are exchanged.

Figure 2.11 shows the basic form of a distributor b-web. The distribution network connects the producer of products and services with the purchaser or customer. It can therefore consist of a physical or digital network and distribution system.

One special type of digital communications provider is the so-called infomediary. This is a unit that collects, manages, and passes on information from customers. Private consumers and companies make use of infomediaries as buyers of goods and services. Apart from management and distribution functions, they also offer services related to data protection. They aid consumers and the other b-webs by offering the following services:

- Management of the access to digital communications networks (user identification, authorization)

Definition of the distributor b-web

Emergence of infomediaries

Services provided by infomediaries

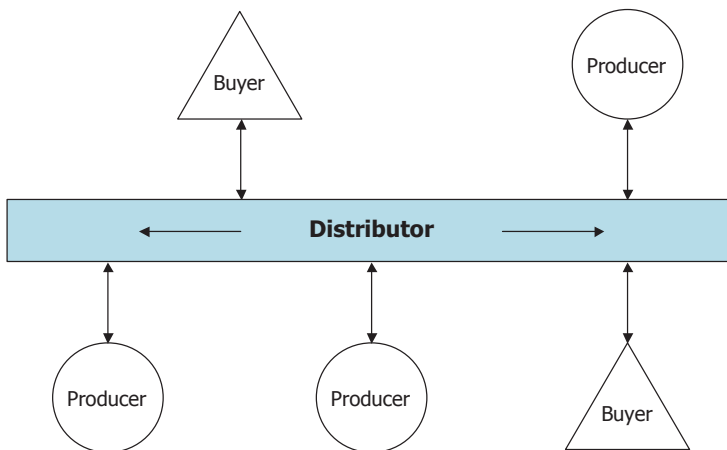


Fig. 2.11: Basic concept of the distributor b-web

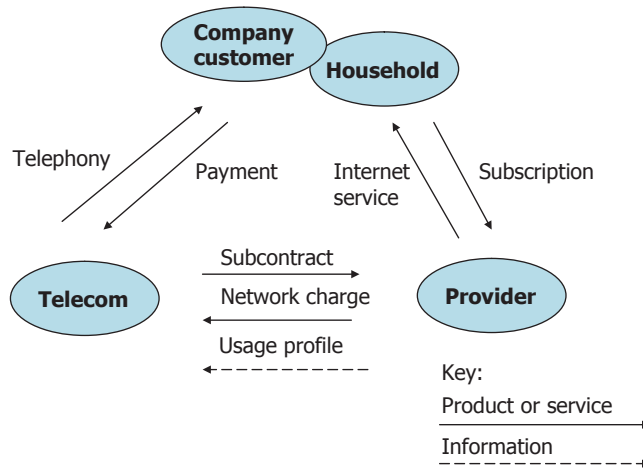


Fig. 2.12: Value creation with a distributor, Telecom

- Management and representation of benchmark figures of different transaction data
- Maintenance of preference profiles for different subject areas, such as health, entertainment, cultural offers, etc.
- Representations of the behavior of customers and customer groups as buyers of goods and services

Infomediaries and distributors therefore specialize in offering companies and private individuals network services with graduated service throughput and varying levels of security. Internet-based distributors try to react to events in real time and to offer optimized distribution processes.

*Telecom as a
distributor
b-web*

Figure 2.12 shows value creation at Telecom when a subcontractor acts as an Internet provider. Telecom is increasingly acting as an infomediary for providers of digital services. Distributors can support three forms of offer, depending on the goods being transported:

Network services for divisible goods. They collect and distribute divisible goods such as electricity or bandwidth for the transport of multimedia objects over digital communications networks.

Network services for forwarded goods. These include carriers, postal services, airlines as well as language, picture and sound mediators in digital communications networks.

Network services for usable goods. Financial and insurance companies loan capital or cover risks.

The advantages of a distributor b-web are:

*Beneficial
aspects of
distributors*

Internationalization. The distributor fulfills its distribution function in global component markets.

Scale effects. Scale effects can be obtained through the bundling of transport and distribution functions.

24-h operation. Many distributors, particularly those with digital communications suppliers, offer around-the-clock service.

Specialization based on the type of goods. Distributors act as network services for divisible, forwarded, or usable goods.

Special function of the infomediary. An infomediary controls the access function and prepares the transaction data.

A distributor facilitates the exchange and delivery of information, goods, and services. Distribution networks contribute to the transformation of regulated monopolies into competitive disaggregated markets (see electronic health market in Sect. 1.2.2).

2.4 Comparison and Valuation of Networks

When a business model is being developed, two fundamental questions arise: which is the most promising b-web for the core business of that particular company, and which b-web should be used to offer supplementary services?

Five basic types of b-web are available: agora, aggregator, integrator, alliance, and distributor. The classification of b-webs reinforces their fundamental characteristics and features when used; a comparison of them is shown in Fig. 2.13.

The aims and main characteristics of b-webs are quite different, and range from open marketplaces with negotiable goods and values (agora type) over tightly organized hierarchical networks (aggregator, integrator, or distributor types) to self-organized and loosely coupled communities (alliance type).

*The variety of
b-webs*

The role of the customer also differs between the individual b-webs. With the agora, the customer is a market participant who orients himself to the market activity and negotiates the exchange of goods. The buyer role of the customer in the aggregator and the customer's role as receiver in the distributor are expanded in the integrator, where the customer becomes a value driver. However, an alliance only functions if the customer gets involved and contributes to the search for and development of solutions.

*Different
customer roles*

In real-world electronic markets, the market participants do not always appear to form clearly definable b-webs. Rather, a b-web often exhibits characteristics of several types of b-web. In addition, various b-webs can be integrated into a particular network of providers and customers. Furthermore, it is obvious that each b-web must exhibit a distribution function, perhaps distributing out via a common market distributor.

*Delimitation is
problematic
with b-webs*

	Agora	Aggregator	Integrator	Alliance	Distributor
Objective	market place for goods and values	digital supermarket	optimized value chain	self-organized value module	exchange of information, goods and services
Characteristics	<ul style="list-style-type: none"> • market information • negotiation process • dynamic price discovery 	<ul style="list-style-type: none"> • distribution of products • firm price • easy fulfillment 	<ul style="list-style-type: none"> • targeted supplier selection • process optimization • product integration 	<ul style="list-style-type: none"> • innovation • trust building • relinquishment of hierarchical control 	<ul style="list-style-type: none"> • network optimization • unlimited use • logistic process
Customer role	market participant	buyer	value driver	contributor	recipient
Benefits	negotiable market service	comfortable selection and fulfillment	customized product	creative and mutual solution	just-in-time delivery
Examples	eBay auctions.yahoo	etrade amazon	Cisco Dell	Linux Music.download	UPS AT&T Telecom

Fig. 2.13: Comparison of the main characteristics of the various types of b-web

Aside from characterizing the b-webs, the different roles of the participants of such networks can also be discussed. The roles change depending on the selected b-web. Despite the changes in a particular participant's role, some fundamental functions are evident:

Customer as creator. Depending upon the type of b-web, the customers behave both as consumers and as creators that actively participate in value creation.

Content provider. These are responsible for the development of goods, services, and information in order to satisfy customer needs.

Context provider. The context provider forms the interface between customers and b-webs. They are jointly responsible for coordination, the rules of the system, and value realization.

Transactions provider. The transactions provider makes it possible to conclude electronic business processes while taking into account data protection and data security.

Infrastructure provider. They make communications and transport networks available and maintain the infrastructure.

Meaning of open standards

The partners and participants associated with b-webs must know and follow the rules of the market. Voluntary consideration of open standards and technologies aids and increases independence. In many cases, the context or transactions

provider creates the rules and supervises their adherence. However, all of the market participants can set rules or suggest changes.

2.5 The Price Formation Process

2.5.1 Options for Price Differentiation

Price management aims to establish an optimal pricing policy based on the strategic goals of the company, and to carry it through in the market. Price formation represents a special challenge in electronic business, since intangible goods and digital product components must also be included in the calculation.

Valuation of intangible product parts is a difficult task, since no generally valid computation method exists for these components. The reason for this is that the first copy is very expensive to produce, while additional copies can be produced at much lower cost. The development of a software package, for example, requires a large investment until a stable, up-and-running first version is completed. However, it is relatively inexpensive to produce additional copies of software, even taking into account distribution costs.

*Price discovery
for intangible
goods*

The task of fixing prices of the products and services in a b-web is not a simple one either, because network aspects come into play here. The customer evaluates the service of a b-web as a whole, and also expects an offer. Within the b-web (obviously depending on the type), it is difficult to classify the different cost contributions. Despite these problems, a price management system for b-webs must be developed and adapted in order to regulate the distribution competition and the value creation of companies associated with the network.

*Considering
aspects of the
network*

For the reasons mentioned above, fixed prices are circumvented if at all possible in electronic business, and a differentiated pricing policy is favored. Price differentiation can flexibly adapt to changing market conditions. Moreover, differentiated prices allow consumer demands to be reconciled temporally, thus enabling the necessary resources and capacities to be optimized.

*Advantages of
price
differentiation*

Differentiated prices guarantee higher profits in many cases. Consider Fig. 2.14. With a high pricing policy (option a) of 800 Euros as the unit price, only 3,000 products must be sold in order to make the same profit as a low pricing policy (option b) of 300 Euros as the unit price, which requires 8,000 samples to be sold. If the differentiated prices (300 and 800 Euros, respectively) allowed easily altered product versions, then an added value (option c) could be obtained with the same sale. It is assumed that with suitable marketing and advertising, different large buyer groups could be found for the economy version of the product for 300 Euros and for the deluxe version for 800 Euros. In other words, it would be disadvantageous to not sell both product versions at different prices.

*Profit
considerations
with price
differentiation*

Price differentiation can be based on different criteria, such as customer segments, time, quantity, or range of services:

Time-related price differentiation. It is assumed here that customer groups display a special high or low willingness to pay at a certain time. Thus, a service provider can arrange access to the Internet according to the time of day and

*Weighing up
the willingness
to pay*

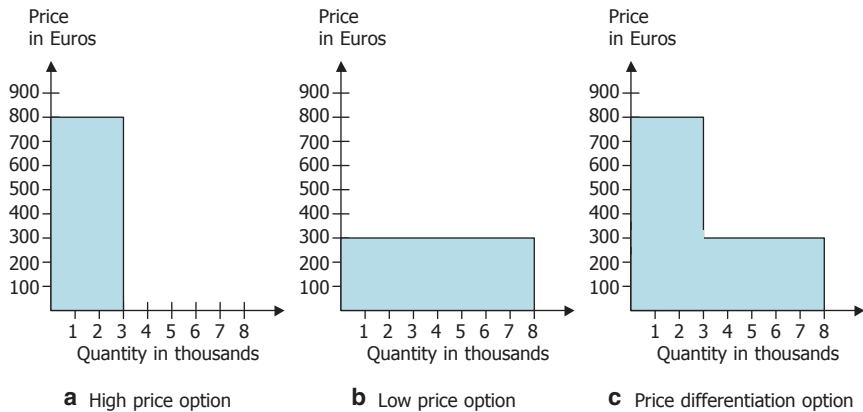


Fig. 2.14: Beneficial effects of price differentiation

offer specific price terms; or purchasable information on market activity is more favorably traded the older the information is.

*Differentiation
based on age,
sex, or social
status*

Customer-related price differentiation. In this variant, customer groups that receive different quotations will be formed. The differentiation can depend on age, sex, or social affiliation. A software supplier could sell some of its products to women or adolescents at more favorable terms in order to lower the entry level threshold for these segments. Naturally, price differentiation based on customer groups requires additional expenditure, as proof of affiliation to the particular group must be furnished and checked. It is assumed, however, that this additional expenditure pays for itself through multi- or additional sales, as exemplified here by women or adolescents.

*Quantity-
related
discounts*

Quantity-related price differentiation. The purchase quantity is a frequent criterion for price differentiation. Quantity-related price differentiation means that the quantity ordered in an electronic transaction offers a discount. Thus, an online bookshop delivers books free of charge if a certain quantity of books or a previously declared sum of money is exceeded. Naturally, a quantity-related differentiation can be limited to the products ordered within a fixed period of time.

*Gradation
based on
function and
service*

Service-related price differentiation. If customers and buyers expect different services, service-related price differentiation is imposed. Different versions of a product with intangible properties prove to be relatively convenient to implement. In a digital product with so-called versioning, the range of services differs in terms of user-friendliness, functionality, or service. For example, trained specialists or experts can buy a software package for data mining without training course documents, case studies, etc., and can do without support services.

Price differentiation is advantageous for b-webs or companies since it increases the profit potential of clever pricing policies. Differentiated prices can also be

attractive from the perspective of the buyer, especially when they draw customers or customer groups that are willing and able to pay.

2.5.2 Linear and Nonlinear Price Formation

In many cases, a proportional connection exists between the performance of a product, or rather a service, and the price asked. This is a case of linear price formation; an example is billing for support services based on the number of hours worked.

Basic principle of linear prices

In nonlinear price formation, there is not a linear dependency between product service and price. This is a significant difference, because it allows the behavior of consumers to be better copied in many cases. Many consumers evaluate product prices relative to the quantity of the product that they already possess or have consumed. In other words the margin benefit decreases with the satisfaction that a consumer gets from consuming the products or services (Gossen's law). The first release of a software package brings the user a greater benefit than any of the product versions supplied later. As the product is revised, the buyer's willingness to pay will likewise decrease. Thus, it is essential to impose a nonlinear pricing policy.

Meaning of nonlinear prices

A nonlinear price consists of various price components. Usually the price curve is a combination of a basic charge and a variable usage charge (see Fig. 2.15). This price is nonlinear because the basic charge is fixed but distributed across all of the units ordered, and so the basic charge per unit drops as the number of units ordered increases. In other words, the greater the sales volume, the lower the average cost per unit.

Construction of nonlinear prices

Electronic trading platforms, such as those used for B2B businesses, often strive for nonlinear price fixing. The operators of such platforms require a basic charge and negotiate a usage charge which depends on the volume of the products and services ordered. When price fixing is applied, the total cost increases steadily with the trading volume, but the average cost does not fall linearly (see Fig. 2.15). So-called service providers select nonlinear price formulations, sometimes with

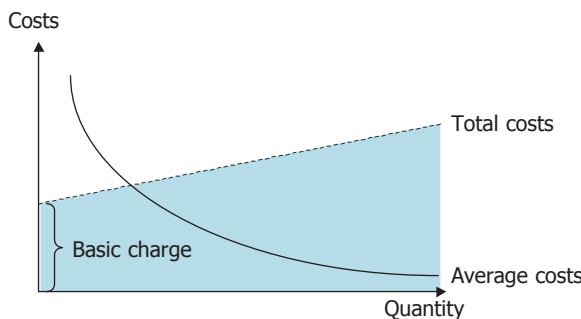


Fig. 2.15: Cost development with nonlinear price formation

more than two components. For example, AOL (America Online) used to impose a basic charge per month and a variable usage charge per minute. On top of this there was an additional charge per Web dial-up.

*Offer with
multistage
tariffs*

Multistage tariffs can also be offered to the customers. In this way, the buyer can better adapt the tariff structure to his individual network structure and usage purposes. The fundamental question of how a combination of basic charges and usage charges can best portray the individual course of the customers' willingness to pay remains, however.

2.5.3 Forms of Price Bundling

In electronic business and the trading of digital goods, the bundling of products or services is of the utmost importance. An example of this is a publishing house that offers the following services as a bundle:

*Example of a
product bundle*

- Subscription to the quarterly magazine "Electronic Business" (physical product)
- Electronic archives of the contributions already published, supported by search procedures (full-text search, search by description, etc.)
- Electronic glossary and collection of links for the topics Electronic Business, Electronic Commerce, and Electronic Government
- Optional news service for current events in the field of eGovernment upon submitting an interest profile

The above example illustrates that the four parts—subscription, archives, glossary, and news service—can be offered as a bundle. Depending upon the policy of the publishing house, the purchasing of individual products or services is not intended (pure bundling), or different bundling variants may be authorized (mixed bundling).

*Price fixing for
product bundles*

If products and services are not offered individually but bundled, then the pricing policy must plan for so-called price bundling; these are quotations for bundles of products and services. Information objects are suitable for bundling, since digital distribution allows the marginal costs to be kept low. Conversely, an interesting bundle of digital and material goods (see the above offer upon the purchasing of a subscription) can create an incentive to get a rather expensive physical object (here a magazine) in a bundle with additional benefits.

*Meaning of
mixed bundle*

The term "mixed bundling" refers to the simultaneous offering of individual products and bundles. As a result, the sum of the prices per unit is many times higher than the price of the bundle. Mixed bundling is a promising approach if the willingness of consumers to pay varies significantly. In a software offer for office automation, one should consider whether components such as word processing, spreadsheet, presentation technology, calendar management, etc., are offered as a mixed bundle. Thus the prospective customer can purchase individual parts at a relatively high price or obtaining the bundle at a reasonable price overall.

Naturally, price bundling is beset with risks, particularly when individual products and bundles compete strongly against each other (tendency toward cannibalization). Individual providers of software products use bundling in order to strengthen market positions and market shares. Thus Microsoft bundles its Windows operating system with the Internet Explorer browser. In this way, its supremacy in the area of operating systems is transferred to the browser market.

Risks of price bundling

2.5.4 Dynamic Price Formation

Dynamic price management reacts to market changes. Dynamic price formation rejects fixed prices in favor of negotiable prices open on the market.

Auctions are regarded as an important instrument for dynamic price formation. These must provide a standardized sequence of events that make the buying and selling of products and services visible. Auctions make it possible to set up flexible prices based on supply and demand in accordance with market conditions and the terms of competition.

Auctions promote dynamic price formation

There are various types of auctions, namely English, Japanese, Dutch, first-price sealed bid auctions, and Vickrey auctions:

On the multitude of auction types

English auction. In the English auction, the bidding process begins with a minimum price. Here each participant bids several times and can also exceed his previous bid. In electronic auctions, the gathering of bidders in one physical trading place does not take place. Since one does not know how many bidders are participating in the auction, electronic auctions are concluded at a time specified during the run-up. The winner of the auction is the one who submitted the highest bid at that time. In other words, in electronic auctions it is not long until only one bidder remains, and this bidder is then awarded the lot.

Japanese auction. This type of auction is equivalent to the English auction except that the bidder does not call out the price himself. The price rises successively higher until only one bidder remains.

Dutch auction. In this auction, events proceed in reverse. At the start of a Dutch auction, a high price is set which is then successively lowered until a bidder is found who accepts that price. In this mechanism of continuous price lowering, the first bidder is awarded the lot. Dutch auctions are proffered with ocean-going ships which auction off the remaining storage space in cases of insufficient capacity utilization. Since the unsold transport capacity is worthless when the ship sails, it is worth holding a Dutch auction with a price clock, for instance.

First-price sealed bid auction. In a first-price sealed bid auction, secret bids are made by the auction participants and simultaneously opened at the end of the auction. The bidder with the highest bid is awarded the lot. The bidders are forbidden to change their bid or to introduce more bids. First-price sealed bid auctions are seldom found on the Internet; mostly industrial products or real estate are sold this way.

Vickrey auction. This auction is largely equivalent to the first-price sealed bid auction. The winner is again the bidder with the highest bid. However, in this case the winner does not pay the price of the highest bid, but that of the second highest bid. For this reason a Vickrey auction is often called a “second-price sealed bid auction.”

Objective of
auctions

It is the goal of auctions to reveal the bidders’ willingness to pay, if possible. In English and Dutch auctions this happens during the bidding process, and it happens at the end of the secret auction in a first-price sealed bid auction. Some

Pros and Cons for Bidders	Description
Admission costs	Possible participation fee for co-bidding in the auction
Search time	Time invested in searching for and evaluating the offer
Negotiation time	Time invested in participating in the auction (opportunity costs)
Price advantage	The price obtained for the auctioned object is better than that obtained by purchasing through other channels
Additional benefits	Fascination with the bidding process
Winners curse	The price obtained from the winner is too high
Risk	Desired objects can be bought by co-bidders
Addiction risk	Competitive tendency can lead to symptoms of addiction

Fig. 2.16: Advantages and disadvantages of various auctions (from a bidder’s perspective)

advantages and disadvantages of bidding at auctions are arranged in Fig. 2.16. The responsibility for fixing prices and negotiating is placed on the shoulders of consumers who want to acquire goods and services at a good price, or who are interested in the dynamics of the auction process. The emergence of strong competitive instincts can lead to prices being tendered beyond the usual fixed prices, or to the bidder succumbing to a frenzy and gambling away his fortune in auctions.

Auction providers aim to open up a new sales channel in the hope of producing advertising effects. Of course, auctions primarily help to expand potential clientele. Auctions on the Web are often focused on certain products and customer segments and supplement the traditional methods of selling.

The operators of auctions and auction portals are intermediaries who increase the volume of transactions using innovative services (advertising campaigns, catalog services, expertise, animation during the auction, handling of payments, etc.). To achieve this, the operator must gain the provider's trust and guarantee to run a high-quality auction.

Auction operators

Due to the popularity of auctions, some providers of electronic shops present their customers with the choice of acquiring the desired article in the electronic store or in the auction arena. Thus, newly published books can be offered in the electronic store while antiquated or officially out of print books are sold in auctions. This allows cannibalization of a particular work to be ruled out. Consequently, auctions present alternative ways of selling for some business models.

One special idea is the organization of inverse auctions. This type of auction is comparable to an invitation for tenders, where the customers make their preferences known and the providers of products and services must compete. There are Web platforms (such as <http://www.travelbids.com>) where the customers submit travel requests and the travel provider can present interesting offers within 2–3 days.

Principle of inverse auctions

2.6 Profit Models for Electronic Markets

Business models for electronic business can be characterized according to positioning, customer benefits, products and services, choice of business web, and profit model. Establishing the sources of profit with which the company refines itself constitutes a central element of the business model. The profit model describes the financial and intangible benefits from the business activity (see Sect. 8.6 on controlling customer relationship management).

Profit model as a central element

The profits in direct profit models result directly from the business activity of the company. In indirect profit models, financial means are made available from the money market. Figure 2.17 shows the direct and indirect profit models for companies in electronic markets. Direct profit models include the following types:

Direct and indirect profit models

Advertising model. The provider of electronic products and services sells advertising surface on its web site. This is only possible if the company has a strong market position and has a considerable number of online customers.

Price model for products and services. This model is obvious and requires a discussion of price differentiation and the selection of suitable parameters for a price model (see Sect. 2.5). An assumption here is that the entire process of procurement to distribution can also be organized economically. With digital products or product parts, costs can be reduced if order procedures, deliveries, and system services are also realized digitally.

Admission model. The customer must pay an admission fee here for the time-limited use of an offer or rather, for access to content. This profit model is suitable for target groups that need information, know-how, or entertainment.

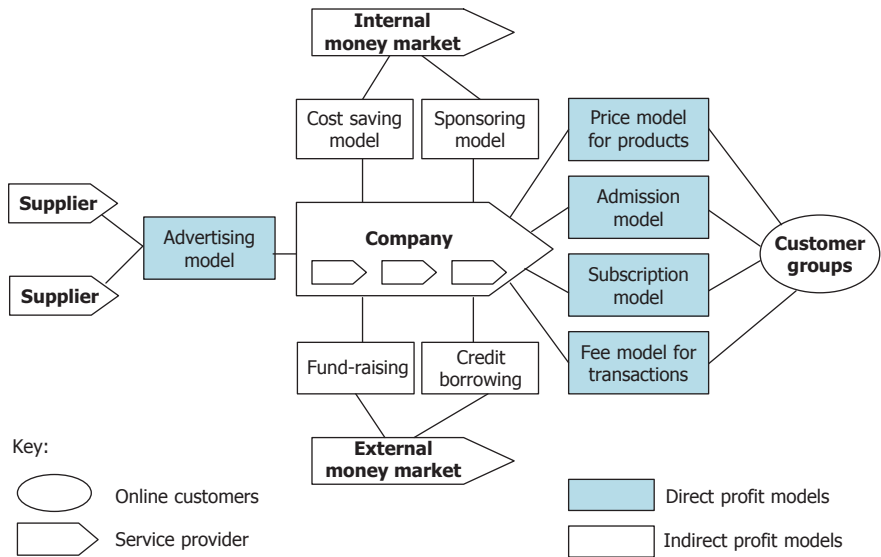


Fig. 2.17: Profit models in electronic markets (according to Birkhofer)

Subscription model. The sale of content is allowed after a fixed subscription fee which is paid periodically.

Fee model for transactions. Here a transaction fee is charged to the customer. This can depend on the duration of use (usage fee), on the content of the downloaded information (content delivery fee), or on the support offered (service fee).

Indirect profit models

The cost saving model is a type of indirect profit model. In this model, it is assumed that the investment in web technologies and in appropriate electronic business processes pays off in the long run and reduces costs.

In the sponsoring model, sponsors financially support the presence of the business on the Web for a certain length of time until its services allow it to become self-supporting.

Fund-raising and credit borrowing profit models rank among those that are dependent on an external money market.

2.7 Literary References

Handbook on eBusiness

The Handbook on Electronic Commerce by Shaw et al. [Sha00] deals with the fundamental technical and legal conditions of eBusiness.

Promising business models, primarily intended for the B2B realm, are discussed in detail in the work by Timmers [Tim99]. The design, architecture, and technology of electronic business systems are outlined in a book by Daun and Scheller [Dau00]. The work by Salouer and Spence [Sal02] discusses opportunities

and risks associated with the use of electronic businesses. In particular, case studies contain information about technologies, industries, firms, and organizational structures. The impacts of eCommerce on industrial structures as well as trading mechanisms for the Internet economy are described in the work of Werthner and Bichler [Wer01].

The organization of electronic services in the financial industry is shown in the work by Cronin [Cro98]. The book describes transaction, production, and management systems in the area of finance.

Business models are illustrated using business webs in the work by Tapscott et al. [Tap00]. Such networks are expanded forms of cooperation and can be subdivided into what Tapscott et al. proposed as agora (exchange platform), aggregation, integration, alliance, and distributor types.

Aspects of price formation are dealt with in the works by Shapiro/Varian [Sha99] along with other topics in electronic business. A contribution addressing profit models in electronic business has been provided by Birkhofer [Bir02]. The study done by Graber [Gra05] analyzes the pricing of Internet transport services and interconnection.

*Fundamental
works on
b-webs*

*Literature on
price formation*